

REMARKS/ARGUMENTS

Status

Claims 1-7 are under examination.

Interview

Applicant thanks Examiner Bogart for the courtesy of a telephonic interview with the undersigned Applicant's representative on January 10, 2007. The Weinberg and Mielke references of record were discussed, as well as proposed claim amendments believed to put the claims in condition for allowance. The amendments and remarks herein are intended to reflect the discussion.

Claim Amendments

Claims 1 and 5 previously recited that the claimed disposable feminine hygiene paper-based product contained *dark-brown fibers*. As discussed in the interview the present amendment clarifies that the dark brown color results because the fibers are coated with an anti-fungal, water-insoluble *dark-brown form of copper* (i.e., a mixture of copper oxide and cuprous oxide). Support for the amendment is found in the specification, for example, at page 8, lines 9-10.

Claims 1 and 5 were previously amended to recite that the disposable feminine hygiene paper-based product was formed from paper mulch. Claim 1 is amended herein to make clear that the disposable feminine hygiene paper-based product need not be made entirely from paper mulch. Support is found in the specification at at least page 2, lines 10-22.

Rejections Under 35 USC 103(a)

Claims 1-3 and 5-7 were rejected as allegedly obvious in view of the combination Weinberg (5,856,248), Fechner (US 2005/0069592) and Mielke (US 6,770,331). Claim 4 was rejected as allegedly obvious in view of Weinberg, Fechner, Mielke and Gabbay (US 6,124,221).

Weinberg was cited as describing a paper sanitary napkin comprising a plurality of fibers coated with an anti-bacterial form of copper. The Office noted that Weinberg did not disclose that the fibers are dark brown as recited in the instant claims. Mielke was cited for teaching dyes that could be used to color fibers brown. Fechner (paragraphs 0040 and 0041) was cited as teaching paper hygiene articles that use CuO as part of an antimicrobial compound.

Fechner

Fechner was cited as teaching paper hygiene articles that use cupric oxide. However, Fechner, including paragraphs 0040 and 0041, described *silicate glass* with an antibacterial effect. Paragraph 0040 described the addition of compounds (including copper oxide) to glass to color it. Paragraph 0041 noted that the *glass product* could be used several areas, including the areas of food additives, cosmetics, paints, paper hygiene, and others. However, nothing in Fechner relates to a product comprising paper fibers associated with copper compounds.

Weinberg

Weinberg described chemically modifying cellulose fibers by a first stage treatment with a water soluble salt of a transition metal (e.g., copper sulfate) and an alkali (e.g., sodium hydroxide), resulting in a fiber having copper cations associated with cellulose by ionic bonds (col. 3, lines 18-19). Weinberg reports that the color of the copper treated cellulose is light blue (see column 3, line 22). Light blue color is a characteristic of copper hydroxide. In the second stage the fiber is treated with a solution of a bisbiguanide compound (e.g., chlorhexidine). The chlorhexidine is bound to copper by coordinative bonds thereby forming a bond between the fibers, the transition metal and bisbiguanide. The process results in a cellulose-copper-bisbiguanide compound complex in which the bisbiguanide compound is attached to cellulose by ionic bonds and the copper is bound to the bisbiguanide compound (column 3, lines 45-54).

The present invention differs from the teachings of Weinberg *inter alia* because the fibers used in the present invention are coated with an entirely different form of copper. As explained in the accompanying declaration by the Inventor, certain forms of copper have a characteristic color. For example, copper hydroxide, as noted above, is light blue. The color characteristic of

cupric oxide is black (see the Material Safety Data Sheet, attached as Exhibit 1 in the Declaration). The color characteristic of cuprous oxide is red (see the Material Safety Data Sheet, attached as Exhibit 1 in the Declaration). As explained in the declaration, a dark brown appearance is a characteristic of a mixture of cupric oxide and cuprous oxide. Thus, while Weinberg teaches use of a light blue form of copper (i.e., copper hydroxide) while the fibers of the present invention are coated with a dark brown form of copper (i.e., a copper oxide mixture containing cuprous oxide and cupric oxide).

Mielke

Mielke was cited by the Office for describing dyes used "to treat paper fibers" including brown dyes. However, Mielke described *ink-jet printer inks* for printing "sheetlike or three-dimensionally configured substrates" such as text on sheets of paper (see Mielke at, e.g., col. 1, lines 12-15 and Example 11). The Office Action also suggests that one of skill would have been motivated to *dye* the fibers of Weinberg *brown* using the inks of Mielke to "allow for the visual inspection of the fibers, their locations within the products, and the amount of copper containing fibers present in the products." However, Applicants respectfully submit it is not plausible that such dyes would be used in the manner proposed by the Office. Nothing in Mielke suggests that individual fibers should be colored so as to identify "their locations within the products" or determine "the amount of copper containing fibers present in the products." Further, the fibers of Weinberg are already colored lilac (see col. 3, lines 45-46, and Examples 1-9), a fact inconsistent with the motivations hypothesized by the Office.

Moreover, *even if, arguendo*, the fibers in Weinberg were dyed with ink they would not be fibers coated a water-insoluble dark brown form of copper as instantly claimed.

Applicants believe it is clear from the discussion above that the references cited by the Office, taken together, did not suggest the present invention.

Gabbay

It would not have been obvious to use the methods of Gabbay in paper production because, *inter alia* paper chemistry and textile chemistry differ in important ways (see the specification at page 6, line 15 to page 7, line 11 and see Applicant's amendment filed September 20, 2006). In paper-making processes, a starting material such as wood chips, plant material and/or recycled paper is first converted to pulp or mulch, a concentrated mixture of the fibers suspended in a liquid as a slurry. After treatment to remove lignin binders and other processing, the pulp or mulch is dried to form paper. Normal paper mulch is usually in an alkaline state with a pH which can vary from 8 to 11. While this atmosphere allows a reduction of copper to a cationic state to occur in an oxidation reduction process, the elements and the pH of the mulch will inhibit a full chemical reaction. The reduction process will upset the malleability of the mulch and the inhibition of the full reaction will in turn cause a limit to the biocidal quality of the mulch.

However, the Applicants have surprisingly found that if fibers are added after the mulch was made, the added fibers do not interfere with the paper forming process and, thus, a usable paper product can be obtained despite the incorporation of the fibers. As stated in the specification page 6, lines 23 to 31 through page 7, lines 1 to 12, "In order to have an effective level of biocidal and fungicidal activity and in order not to upset the proper production of paper, it was found ...that a fiber prepared with a plating of a cationic species of copper on it could be added to the mulch in the final stages of production..."

Applicants believe it is clear from the discussion above that the references cited by the Office, taken together, did not suggest the present invention. In view of the above amendments and comments, Applicants respectfully request withdrawal of the rejection under 35 U.S.C. §103(a).

Related applications

Applicants wish to make the Examiner aware of the following patent and copending applications by the same inventor (this list was inadvertently omitted from Applicant's last amendment. Attention is particularly drawn to application Nos. 10/405,408 entitled "Disposable Paper-Based Hospital and Operating Theater Products" and 10/757,786 entitled "Disposable Diaper for Combating Diaper Rash".

	Pub. No.	App. No.
1	US-2004-0224005	10/240,993*
2	US-2004-0247653	10/890,936
3	--	11/648,858
4	US-2005-0150514	11/066,893
5	US-2003-0198945	10/339,886
6	US-2005-0123589	10/966,138
7	US-2004-0197386	10/405,408
8	US-2004-0167485	10/757,786
9	US-2005-0049370	10/752,938
10	US-2005-0048131	10/772,890

* Now U.S. Pat. No. 7,169,402

** Continuation of Pat. No. 7,169,402

Double Patenting

Claims 1-7 were rejected as unpatentable over copending application No. 10/757,786 in view of Weinberg. A terminal disclaimer will be submitted under separate cover. To expedite prosecution a terminal disclaimer will also be provided in relation to co-pending App. No. 10/405,408.

Appl. No. 10/756,849
Amdt. dated March 5, 2007
Reply to Office Action of December 4, 2006


PATENT

CONCLUSION

In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested, if appropriate.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 650-326-2400.

Respectfully submitted,



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